

WHAT IS CLAIMED IS:

1. An electrochemical device for scale treatment in water supply systems, comprising:

(a) an electrochemical cell including:

- (i) a metallic tank for receiving a water supply, said tank forming a cathode of said electrochemical cell; and
- (ii) at least one anode, disposed within said tank;

said electrochemical cell for operatively connecting to an electrical power supply, said electrochemical cell operative to produce a pH above 12 near a wall of said tank, so as to form a scale deposition on said wall, thereby removing said deposition from said water supply;

(b) an elastic scraper disposed within said tank, said scraper operative for scraping said wall of said tank; and

(c) a control system for said elastic scraper, said control system designed and configured to activate said scraper so as to promote said scale deposition on said wall.

2. The electrochemical device of claim 1, wherein said anode includes a material selected from the group consisting of aluminum, magnesium, and zinc.

3. The electrochemical device of claim 1, wherein said anode includes a material selected from the group consisting of an alloy of TiNiO and a metal coated by an alloy of TiNiO.

4. The electrochemical device of claim 1, wherein said control system is an automatic control system, said automatic control system has a control mechanism selected from the group consisting of a pneumatic mechanism and an electrical system.

5. The electrochemical device of claim 1, wherein said control system includes at least one indicator, said at least one indicator for triggering said scraper to scrape said wall.

6. The electrochemical device of claim 5, wherein said indicator is for measuring a physical property associated with a thickness of said scale deposition.

7. The electrochemical device of claim 6, wherein said physical property is electrical resistance, and wherein said control system is designed and configured to activate said scraper responsive to a differential in said electrical resistance.

8. The electrochemical device of claim 7, wherein said differential in said electrical resistance is a differential of up to 3 ohms.

9. The electrochemical device of claim 5, wherein said at least one indicator is designed and configured to trigger said scraper to scrape said wall when said thickness of said scale deposition reaches up to 2 mm.

10. The electrochemical device of claim 5, wherein said at least one indicator is designed and configured to trigger said scraper to scrape said wall when said thickness of said scale deposition reaches up to 0.5 mm.

11. The electrochemical device of claim 1, wherein said control system includes a timing mechanism, said timing mechanism being designed and configured to trigger said scraper according to a pre-determined time parameter.

12. The electrochemical device of claim 11, wherein said pre-determined time parameter is a fixed time interval.

13. The electrochemical device of claim 12, wherein said fixed time interval is up to 12 hours.

14. The electrochemical device of claim 12, wherein said fixed time interval is up to 1 hour.

15. The electrochemical device of claim 1, wherein said electrical power supply is designed and configured to supply a pre-determined constant current.

16. The electrochemical device of claim 1, wherein said elastic scraper includes a circumferential elastic ring, said circumferential ring configured to promote contact between said ring and said scale deposition during removal of said scale deposition.

17. The electrochemical device of claim 6, wherein said control system is designed and configured to activate said scraper according to a combined function including said physical property and a pre-determined time parameter.

18. An electrochemical device for scale treatment in water supply systems, comprising:

- (a) an electrochemical cell including:
  - (i) a metallic tank for receiving a water supply, said tank forming a cathode of said electrochemical cell; and
  - (ii) at least one anode, disposed within said tank;

said electrochemical cell for operatively connecting to an electrical power supply, said electrochemical cell operative to produce a pH above 12 near a wall of said tank, so as to form a scale deposition on said wall, thereby removing said deposition from said water supply;

- (b) an elastic scraper disposed within said tank, said scraper operative for scraping said wall of said tank; and

- (c) a control system for said elastic scraper, said control system designed and configured to supply a predetermined constant current for activating said scraper so as to promote said scale deposition on said wall.

19. The electrochemical device of scale treatment of claim 18, wherein said control system includes a timing mechanism, said timing mechanism being designed and configured to trigger said scraper according to a pre-determined time parameter.

20. The electrochemical device of scale treatment of claim 19, wherein said pre-determined time parameter is a fixed time interval.

21. An electrochemical method of scale treatment in water supply systems, the method comprising the steps of:

(a) providing a system including:

(i) an electrochemical cell including:

(I) a metallic tank for receiving a water supply, said tank forming a cathode of said electrochemical cell; and

(II) at least one anode, disposed within said tank;

(ii) an elastic scraper disposed within said tank, said scraper operative for scraping a wall of said tank;

(b) operating said cell so as to operatively produce a pH above 12 near said wall of said tank, so as to form a scale precipitate on said wall, thereby removing said precipitate from said water supply; and

(c) controlling an operation of said scraper so as to promote said scale deposition on said wall.

22. The electrochemical method of scale treatment of claim 21, further comprising the step of:

(d) measuring a physical property correlated with a thickness of said scale deposition, to obtain a measurement,

wherein said controlling of said operation of said scraper is at least partially based on said measurement.

23. The electrochemical method of scale treatment of claim 22, wherein said physical property is selected from the group consisting of electrical resistance and electrical conductivity.